APPENDIX B: SYSTEM ENGINEERING MANUAL GLOSSARY

TERM	DEFINITION
Allocated Baseline	The approved documentation describing a CI's functional, performance, interoperability, and interface requirements that are allocated from those of a system or higher level configuration item; interface requirements with interfacing configuration items; and the verifications required to confirm the achievement of those specified requirements. *(MIL-STD-973)*
Allocation	Top-down distribution of system-level requirements to the subsystem, element, component, or to the project team that delegated to meet the requirement. Allocation is also the assignment of performance requirements to functions. *(Refer to SEM 4.3)*
Analysis	Logical examination or study of a system to determine the nature, relationships, and interaction of its parts and environment. *(FAA SEM 4.1)*
AND	(Functional Analysis) A condition where all preceding or succeeding paths are required. *(FAA SEM 4.4)*
Availability	The probability that a system or constituent piece will be operational during any randomly selected period of time, or, alternatively, the fraction of the total available operating time that the system or constituent piece is operational. *(FAA SEM 4.8.2)*
Baseline	An agreed-to description of the attributes of a product at a point in time, which serves as a basis for defining change. *(ANSI/EIA-649-1998)*
Behavior Diagram	Graphical representation of system dynamics that incorporates system responses to inputs. A type of functional flow diagram. The behavior diagram differs from functional flow block diagrams in that behavior diagrams contain data flow and control elements. *(See Functional Flow Block Diagram.)*
Change	Any alteration to a product or its released configuration documentation. A configuration change may involve modification of the product, product information and associated interfacing products. *(ANSI/EIA-649-1998)*
Component	A clearly identified (set of) part of the product being designed or produced. *(FAA SEM 2.2)*
Computer Software Component	A functionally or logically distinct part of a CSCI, typically an aggregate of two or more software units. *(FAA SEM 2.2)*
Computer Software Configuration Item	An aggregation of software that is designed for configuration management and treated as a single entity in the Configuration Management process. *(FAA SEM 2.2)*
Computer Software Unit	An element specified in the design of a CSC that is separately testable or able to be compiled. *(FAA SEM 2.2)*
Concept of Operations (CONOPS)	Description of what is expected from the system, including its various modes of operation and time-critical parameters. *(FAA SEM 4.3)*

TERM	DEFINITION
Concept of Use (CONUSE)	A textual document representing the results of high-level Functional Analysis efforts. It is usually derived solely from the user's perspective as an extension of a higher-level CONOPS with an emphasis on a particular system and its operating environment. It explains the existing system, current environment, users, interaction among users and the system, and organizational impacts. *(FAA SEM 4.4)*
Configuration Control Board	An Agency-authorized forum for establishing configuration management baselines and for reviewing and acting upon changes to these baselines. A CCB ensures the functional and operational integrity of a baseline through the establishment and enforcement of effective change management and control practices and processes. *(FAA SEM 4.11)*
Configuration Identification	The systematic process of selecting product attributes, organizing associated information about the attributes, and stating those attributes. It includes assigning and applying unique identifiers for the product and its associated documentation, as well as maintaining document revision relationships to the product configurations. *(FAA SEM 4.11)*
Configuration Item	Aggregation of hardware, software, processed materials, services, or any of its discrete parts that is demonstrated for configuration management and treated as a single entity in the configuration management process. *(FAA SEM 4.11)*
Configuration Management	A management process for establishing and maintaining consistency of a product's performance, functional, and physical attributes with its requirements, design, and operational information throughout its life. *(ANSI/EIA-649-1998)*
Configuration Status Accounting (CSA)	The systematic recording and reporting of system or product configuration status. Configuration Status Accounting includes baseline change status and history for all items shown in the Master Configuration Index from initial delivery to end of product service. *(FAA SEM 4.11)*
Constraint	Internal or externally imposed boundary conditions which place limits within which the system or process must remain. *(FAA SEM 4.3)* A restriction, limit, or regulation, or, a type of requirement that is not tradable against other requirements. *(EIA Standard 731)*
Control Gate	A formal decision point along the life cycle that are used by the system owner and stakeholders to determine if the current phase of work has been completed and the team is ready to move into the next phase of the lifecycle. *(FAA SEM 4.2.6)*
Critical Design Review	Formal technical review conducted to evaluate the completeness of the design, its interfaces, and suitability to start initial manufacturing. *(FAA SEM 3.3)*
Decomposition	Partitioning/dividing a requirement into its lower-level discrete elements or parts. (Refer to SEM 4.3)

TERM	DEFINITION
Demonstration	Type of verification accomplished by operation, adjustment, or reconfiguration of items performing their design functions under specific scenarios. It is similar to test except that it does not require instrumentation. *(FAA SEM 4.12)*
Demonstrated Performance	The ability of an analysis to produce results that compare favorably with results obtained from the system being modeled over common areas of performance. *(FAA SEM 4.9)*
Derived Requirements	Any requirement that is not explicitly identified by the Customer or Stakeholder. *(Refer to SEM 4.3)*
Design Analysis Report	A report that documents the results of a specific Specialty Engineering analysis with rationale. Each DAR contains a description of the system's special characteristics, a list of existing requirements that have undergone the Validation and Verification process, residual risks, and candidate requirements found as a result of the analysis. *(FAA SEM 4.3)*
Deviation	Specific, written authorization, granted prior to the manufacture of an item, to depart from a particular requirement(s) of an item's current approved configuration documentation for a specific number of units or a specified period of time. (A deviation differs from an engineering change in that an approved engineering change requires corresponding revision of the item's current approved configuration documentation, whereas a deviation does not.) *(MIL-STD-973)*
Digital Data	Information prepared and maintained by electronic means and provided by electronic data access, interchange, transfer, or on electronic media. *(FAA SEM 4.11)*
Digital Device	Any unintentional radiator (device or system) that generates and uses timing pulses at a rate in excess of 9000 pulses (cycles) per second and uses digital techniques . . . *(FCC – Refer to SEM 4.8.4)*
Disposal	*(Lifecycle perspective)* All activities associated with disposal management, dismantlement/demolition/removal, restoration, degaussing, or destruction of storage media and salvage of decommissioned equipment, systems, or sites. *(FAA SEM 4.13)*
Effectivity	Designation defining the point in time, an event, or a product range (e.g., serial, lot number, model, date) at which changes or variances to specific products are to be effected. The authorized and documented point of usage for a specific configuration of a part/assembly/installation, etc. *(Refer to SEM 4.11)*
Electromagnetic Compatibility	The ability of a system to function within its electromagnetic environment and, itself, not be a source of troublesome electromagnetic interference. *(American National Standards Institute (ANSI) C63.14)*
Electromagnetic Environment	Consists of the systems and other elements (such as humans and nature) that exist within the area that a given system is (or is to be) operated. *(American National Standards Institute (ANSI) C63.14)*

TERM	DEFINITION
Electromagnetic Environmental Effects (E³) Engineering	The technical discipline dealing with safe and efficient operation of electronic devices regarding radiated and conducted electromagnetic emissions. This includes both a given system's ability to deal with such emissions from its operational environment and how the device itself affects that environment. *(FAA SEM 4.8.4)*
Electromagnetic Pulse	An intense burst of electromagnetic interference caused by a nuclear explosion. Such a pulse may damage sensitive electronic systems or cause them to temporarily malfunction. *(American National Standards Institute (ANSI) C63.14)*
Electromagnetic Susceptibility	The weaknesses or lack of resiliency a system may have to certain electromagnetic conditions. *(American National Standards Institute (ANSI) C63.14)*
Electrostatic Discharge	An unintentional transfer of static electricity from one object to another. *(American National Standards Institute (ANSI) C63.14)*
(System) Element	An integrated set of components that comprise a defined part of a subsystem (e.g., the fuel injection element of the propulsion subsystem) *(FAA SEM 2.2).*
(NAS) Enterprise Architecture	A strategic and evolutionary plan for modernizing the NAS that supports investment analysis tradeoffs. It focuses on defining and delivering the services that meet aviation industry and public needs, which it accomplishes by decomposing the services into capabilities that are the functions and activities necessary to deliver a service. Each capability is defined by the operational improvements required to deliver the capabilities. Each operational improvement is defined in terms of the mechanisms required to provide each step. Finally, each mechanism is defined in terms of the people, systems, and support activities provided by the procuring office. *(FAA SEM 4.3)*
Environment	Natural and induced conditions experienced by a system, including its people, product, and processes. *(Refer to SEM 4.4)*
Exclusive OR	(Functional Analysis) A condition where one of multiple preceding or succeeding paths is required, but not all. *(FAA SEM 4.4)*
Extensibility	The ability of a design alternative to serve new or multiple uses. (As opposed to flexibility) *(FAA SEM 4.5)*
Facility Baseline	The information needed to identify and control changes as well as record configuration and change implementation status of all CIs under Regional CCB authority. *(FAA SEM 4.11)*
Failure Modes and Effects Analysis	An evaluation process for analyzing and assessing the potential failures in a system, i.e. a systematic method of identifying the failure modes of a system, a constituent piece, or function and determining the effects on the next higher level of the design. *(FAA SEM 4.8.2)*
Failure Modes and Effects Criticality Analysis	An analysis method used to identify potential design weaknesses through a systematic analysis approach that considers all possible ways in which a component may fail (the modes of failure); possible causes for each failure; likely frequency of occurrence; criticality of failure;

TERM	DEFINITION
	effects of each failure on systems operation (and on various system components); and any corrective action that may be initiated to prevent (or reduce the probability of) the potential problem from occurring in the future. *(FAA SEM 4.8.2)*
Federal Aviation Administration Order	A permanent directive on individual subjects or programs that apply to the FAA. It directs action or conduct using action verbs. Orders also prescribe policy, delegate authority, and empower and/or assign responsibility for compliance with stated requirements or direction. Orders empower or direct only FAA personnel and carry no weight with contractors. *(FAA SEM 4.3)*
Flexibility	The ability (of a design alternative) to adapt to and accommodate growth needs (as opposed to extensibility) *(FAA SEM 4.5)*
Function	Characteristic action, or activity that needs to be performed to achieve a desired system objective (or stakeholder need). *(FAA SEM 4.4)*
Function name	An action that describes the desired system behavior. A *function name* is stated in the form of an action verb followed by a noun or noun phrase. *(FAA SEM 4.4)*
Functional Analysis	A System Engineering process that translates stakeholders' needs into a sequenced and traceable functional architecture. *(FAA SEM 4.1)*
Functional Architecture	Hierarchical arrangement of functions and interfaces providing a complete representation of the system from a performance and behavioral perspective. *(FAA SEM 4.4)*
Functional Baseline	The approved documentation describing a system's or item's functional, interoperability, and interface characteristic, and the verifications required to demonstrate the achievement of those specified requirements. *(MIL-STD-973).*
Functional Baseline Review	A formal review to ensure that requirements have been completely and properly identified and that there is a mutual understanding between the implementing organization and stakeholders. *(FAA SEM 3.3)*
Functional Configuration Audit	A formal review to verify that the system and all subsystems can perform all of their required design functions in accordance with their functional and allocated configuration baselines. *(FAA SEM 3.3)*
Functional Decomposition	Approach to reducing functional complexity by allocating functionality and interfaces to more readily understood and managed sublevel functions. *(FAA SEM 4.4)*
Functional Flow Block Diagram	A Multi-tier, time-sequenced, step-by-step diagram that defines the detailed, step-by-step operational and support sequences for systems. (See also Behavior Diagram.) *(FAA SEM 4.4)*
Functional Interface	Logical or physical association between functions that allows transmission of a quantity across a boundary. Quantities may include electrical, hydraulic, and pneumatic power; mechanical forces and torques; gases; heat; vibration, shock, and loads; data; and other quantities*. (FAA)*

TERM	DEFINITION
Handbook	A guidance document that contains information or guidelines for use in design, engineering, production, acquisition, and/or supply management operations. These documents present information, procedural and technical use data, or design information related to processes, practices, services, or commodities. *(FAA SEM 4.3)*
Hazard	Any real or potential condition that can cause injury, illness, or death to people; damage to, or loss of, a system (hardware or software), equipment, or property; and/or damage to the environment. *(FAA SEM 4.8.1)*
Hazardous Material Management/ Environmental Engineering	The mechanism applied within the system engineering process to ensure a program's ongoing compliance with applicable environmental laws. It is also the process designed to provide early, pre-deployment planning and coordination to minimize the negative impacts that site-specific environmental conditions may have on a program's operability. *(FAA SEM 4.8.7)*
Human Factors Engineering	A multidisciplinary effort to generate and compile information about human capabilities and limitations, and apply that information to (the design and acquisition of complex systems) produce safe, comfortable, and effective human performance. *(FAA SEM 4.1)*
In-Service Performance Review	A formal technical review to characterize in-Service technical and operational health of the deployed system by providing an assessment of risk, readiness, technical status, and trends in a measurable form that will substantiate in-Service support, budget priorities, and/or possible disposal. *(FAA SEM 3.3)*
Inclusive OR	(Functional Analysis) A condition where one, some, or all of the multiple preceding or succeeding paths is required. *(FAA SEM 4.4)*
Inspection	Type of verification method accomplished by visually examining the item, reviewing descriptive documentation, and comparing the appropriate characteristics with predetermined standards to determine conformance to requirements without the use of laboratory equipment or procedures. *(FAA SEM 4.12)*
Integrity of Analyses	A disciplined process applied throughout a program to ensure that analyses provide the required levels of fidelity, accuracy, and confirmed results in a timely manner. Integrity is ensured by competent users iteratively applying a validated set of tools to a clearly defined data set. *(FAA SEM 4.1 and 4.9)*
Integrated Logistics Support (ILS)	a structured discipline for defining support constraints and acquiring support assets so that fielded products can be operated, supported, and maintained effectively over their entire service life. (FAA SEM 4.13)
Integrated Technical Planning	The tactical and strategic means of defining problems, forecasting conditions, and coordinating program elements to maximize program focus on providing superior products and services. *(Forsberg, Mooz, and Cotterman)*

TERM	DEFINITION
Integration	The progressive linking and testing of system components to merge their functional and technical characteristics into a comprehensive, interoperable system. *(Institute for Telecommunications, US Dept of Commerce)*
Interface	The performance, functional, and physical attributes required to exist at a common boundary. *(FAA SEM 4.1)*
Interface Control Document (ICD)	A design document that describes the detailed, as-built implementation of the functional requirements contained in the IRD *(FAA SEM 4.7)*
Interface Management	An element of System Engineering (SE) that helps to ensure that all the pieces of the system work together to achieve the system's goals and continue to operate together as changes are made during the system's lifecycle. *(FAA SEM 4.1)*
Interface Requirements	Requirements specifying the performance, functional or physical attributes that are required to exist at a common boundary. This boundary can exist between two or more functions, systems, system elements, configuration items, or systems. *(FAA SEM 4.7)*
Interface Requirements Document (IRD)	Document that provides FAA interface requirements between two elements, including type of interface (electrical, pneumatic, hydraulic, etc.) and the interface characteristics (functional or physical). *(FAA SEM 4.7)*
Interface Working Group (IWG)	A forum for discussing interface issues. IWG meetings serve two purposes: to ensure effective, detailed definition of interfaces by all cognizant parties, and to expedite baselining of initial IRDs, ICDs, and subsequent drawing changes by encouraging resolution of interface issues. *(FAA SEM 4.7)*
Lifecycle	Entire spectrum of activity for a given system, commencing with the identification of a need and extending through system design and development, production and/or construction, operational use, sustaining support, and system retirement and phaseout. *(FAA SEM 4.1)*
Lifecycle Engineering	An objective process to evaluate the constraints and dependencies associated with developing and operating a product or service, while seeking to maximize the product or service's value while minimizing the cost of ownership of the product or service over the entire life cycle. *(FAA SEM 4.1)*
Maintainability	The measure of the ability of a failed system or constituent piece to be restored to its fully operational status. *(FAA SEM 4.8.2)*
Master Configuration Index	A list of all baselined systems, equipment and software currently operational or under procurement for the National Airspace System (NAS) with current approved baseline documentation. *(FAA SEM 4.3)*
Mature Requirement Statement	A written statement of a requirement in one or more complete sentences in a familiar language (normally English) using the idiom of a particular business sector, such as air traffic control or avionics. *(FAA SEM 4.3)*

TERM	DEFINITION
Mean Time Between Failure (MTBF)	The mean number of life units during which all parts of the system or constituent piece perform within their specified limits, during a particular measurement interval under stated conditions. *(FAA SEM 4.8.2)*
Mean Time To Failure (MTTF)	The average time for a system to fail initially, based on the behavior of similar systems, operated under specified conditions for the duration of a specified time interval. *(FAA SEM 4.8.2)*
Mean-Time-To-Restore	The average total elapsed time from initial failure to resumption of operation. *(FAA SEM 4.8.2)*
Measure of Effectiveness (MOE)	Measures of operational effectiveness and suitability in terms of operational outcomes that identify the most critical performance requirements to meet system-level mission objectives. *(FAA SEM 4.3)*
Mechanism	A control gate that assesses the progress of the system against criteria established for a given point in the system's life cycle. *(FAA SEM 4.2.6)*
Minimum Aviation System Performance Standard (MASPS)	A standard (published by RTCA) that address the user-level service requirements used to qualify an aviation system for operational acceptance and to allocate requirements for the subsystems (including avionics). The standards provide information that explains the rationale for system characteristics, operational goals, requirements, and typical applications. *(FAA SEM 4.3)*
Minimum Operational Performance Standard (MOPS)	A standard (published by RTCA) that describes typical (avionics) equipment applications and operational goals and establishes the basis for required performance and test procedures for verification under a common set of standards. Definitions and assumptions essential to proper understanding are provided, as well as installed equipment tests and operational performance characteristics for equipment installations. The MOPS also provide information that explains the rationale for equipment characteristics and stated requirements. *(FAA SEM 4.3)*
(Service level) Mission Need	A document that translates a CONOPS into the needs and requirements of the users and service providers. It identifies the decision factors relevant to a capability shortfall or a technological opportunity to satisfy a mission more efficiently or effectively. *(Refer to SEM 4.4)*
Model	Representation of an actual or conceptual system that involves mathematics, logical expressions, or computer simulations that may be used to predict how the system might perform or survive under various conditions or in a range of hostile environments. *(See also Simulation)*
Module (Computer Software)	A program unit that is discrete and identifiable with respect to compiling, combining with other units, and loading. *(FAA SEM 2.2)*
N^2 Diagram	Visual matrix representing functional or physical interfaces between system elements. *(FAA SEM 4.4)*
National Air Space (NAS)	the overall environment in which aircraft operate, including aircraft, pilots, tower controllers, terminal area controllers, en route controllers, oceanic controllers, maintenance personnel, and airline dispatchers, as well as the associated infrastructure (facilities, computers,

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	communications equipment, satellites, navigation aids, and radars) *(FAA SEM 2.2)*
Operational Baseline	The Product Baseline adapted to local conditions, i.e. the approved technical documentation representing installed operational hardware and software. *(FAA SEM 4.11)*
Operational Services and Environmental Description (OSED)	A comprehensive, holistic system description that describes the services, environment, functions, and mechanizations that form a system's characteristics. *(FAA SEM 4.4)*
Order (FAA)	A permanent directive on individual subjects or programs that apply to the FAA. It directs action or conduct using action verbs. *(FAA SEM 4.3)*
Precipitation-Static (P-Static)	The buildup of static electricity resulting from an object's exposure to moving air, fluid, or tiny solid particles (e.g., snow or ice). *(American National Standards Institute (ANSI) C63.14)*
Part	One, two, or more pieces joined together to make a component; these pieces are not normally subject to disassembly without destruction or impairment of designed use – the lowest level of separately identifiable items within a system. *(FAA SEM 2.2)*
Performance	Quantitative measure characterizing a physical or functional attribute relating to the execution of an operation or function. Performance attributes include quantity (how many or how much), quality (how well), coverage (how much area, how far), timeliness (how responsive, how frequent), and readiness (availability, mission/operational readiness). Performance is an attribute for all systems, people, products, and processes, including those for development, production, verification, deployment, operations, support, training, and disposal. Thus, supportability parameters, manufacturing process variability, reliability, and so forth are all performance measures.
Physical Architecture	Hierarchical arrangement of hardware and/or software components along with associated interfaces depicting the physical definition of the system. *(FAA SEM 4.4)*
Physical Configuration Audit	the formal examination of the "as-built" configuration of a configuration item against its technical documentation to establish or verify the configuration item's product baseline. *(MIL-STD-973)*
Practice (ICAO recommended)	Identical to a standard except that it is not considered necessary - only desirable. *(See Standard (ICAO)below)*
Preliminary Design Review	Formal technical review of initial design concepts and documentation to confirm the preliminary design logically follows the SRR findings, meets the requirements, and to further define physical and functional interface requirements. *(FAA SEM 3.3)*
Primitive Requirement Statement	A form of a requirement statement that has no punctuation or formal sentence structure and is not written in a formal specification style. *(FAA SEM 4.3)*

TERM	DEFINITION
Product	Whole system, entity, or process being designed, developed, and/or produced. *(FAA SEM 4.3)*
Product Baseline	The configuration of the system or product being delivered to the customer. It is comprised of the combined performance/design documentation utilized for the production/procurement of the CI. This documentation package incorporates the allocated baseline documents describing a CI's functional, performance, interoperability and interface requirements and the verifications required to confirm the achievement of those specified requirements. It also includes additional design documentation, ranging from form and fit information about the proven design to a complete design disclosure package, as is deemed necessary for acquisition of the CI. *(MIL-STD-973)*
Product Definition	The aggregation of configuration item (CI) descriptions and supporting documentation necessary to define a product. This includes all hardware configuration items (HWCI) and computer software configuration items (CSCI). After the product baseline is established, the product definition includes ALL documentation required to design, build, assemble, test, modify, repair or support the product. This includes tooling, planning, analyses, parts lists, material standards and other product related items. *(FAA SEM 4.11)*
Quality Engineering	An objective analysis of all planned and systematic activities to ensure that a product or service fulfills requirements and is of the highest quality. *(FAA SEM 4.8.5)*
Quality Function Deployment	Method for capturing and delineating requirements based on identifying what is desired by the customer or stakeholder, along with how that desire may be satisfied. *(Refer to SEM 4.6)*
Reference Analyses	A set of authorized, validated analyses (certified in the case of simulations) established as reference analysis methods for use in subsequent analyses. *(FAA SEM 4.9)*
Reference Model	The function modeled in one particular validated tool is identified as a standard for comparison. A reference model is established to capitalize on primary expertise in specific areas of performance and to provide consistency at the subsystem level. *(FAA SEM 4.9)*
Reference Database	A database that represents the selected subsystem performance through tabulated values. *(FAA SEM 4.9)*
Reference Check Case	A representative set of conditions or characteristics for a situation under study that is used as the basis for certification comparison. *(FAA SEM 4.9)*
Reliability	Ability of a system and its parts to perform its mission without failure, degradation, or demand on the support system. It is generally characterized by the Mean-Time-Between-Failure (MTBF). *(FAA SEM 4.8.2)*

TERM	DEFINITION
Requirement	An essential characteristic, condition or capability that shall be met or exceeded by a system or a component to satisfy a contract, standard, specification, or other formally imposed document. *(FAA SEM 4.3)*
Requirement Set	An aggregate of requirements for a system that specifies its characteristics in totality. *(FAA SEM 4.3)*
Requirements Analysis	The determination of system specific characteristics based on analyses of customer needs, requirements, and objectives; missions; projected utilization environments for people products and processes; constraints; and measures of effectiveness. *(FAA SEM 4.3)*
Requirements Document	Collection of requirements and related information/attributes presented in a user-defined format. *(FAA SEM 4.3)*
Requirements Management	a process performed throughout a system's lifecycle, to elicit, identify, develop, manage, and control requirements and associated documentation in a consistent, traceable, correlatable, verifiable manner. *(FAA SEM 4.1)*
Requirements Verification Compliance Document	A document that provides evidence of system design compliance for each product requirement at all levels. *(FAA SEM 4.3)*
Risk	A future event or situation with a realistic (non-zero nor 100 percent) likelihood/probability of occurring and an unfavorable consequence/impact to the successful accomplishment of well-defined goals if it occurs *(FAA SEM 4.1)*
Risk *(Information Security)*	The combination of a threat, its likelihood of successfully attacking a system, and the resulting effects and harm from that successful attack. *(FAA SEM 4.8.6)*
Risk Identification	A systematic effort to uncover possible events or conditions that, if they occur, may hinder achievement of program or organization objectives. *(FAA SEM 4.10)*
Risk Management	An organized, systematic decision-support process that identifies risks, assesses or analyzes risks, and effectively mitigates or eliminates risks to achieve program or organizational objectives. *(FAA SEM 4.1)*
Risk Realization (Date)	The point in time of an event that either makes the risk a real part of the program or eliminates the need to track the risk. *(FAA SEM 4.10)*
SE Investment Analysis Review	A formal SE review to determine if the mission need capabilities shortfall and attendant solution set of alternatives are complete enough to support a Mission Need Decision. *(FAA SEM 3.3)*
Similarity	Type of verification by analysis. Applicable to components and subsystems similar in characteristics and usage to those on previous systems, and the prior system was qualified to equivalent or greater specifications. *(FAA SEM 4.12)*
Simulation	Execution of a system model to examine the response of the system to injected inputs, usually performed before development of system hardware and software. *(See also Model above) (Refer to SEM 4.12)*

TERM	DEFINITION
Software	A combination of associated computer instructions and computer data definitions required to enable the computer hardware to perform computational or control functions. *(FAA SEM 2.2)*
Specialty Engineering	A System Engineering domain that defines and evaluates a system's specific areas, features, or characteristics. Specialty Engineering supplements the design process by defining these characteristics and assessing their impact on the program. *(FAA SEM 4.1)*
Specification	A document prepared specifically to support an acquisition that clearly and accurately describes the essential technical requirements for purchased material or products and the criteria for determining whether the requirements are satisfied. *(FAA SEM 4.3)*
Standard	A document that establishes engineering and technical requirements for processes, procedures, practices, and methods that have been adopted as standard. *(FAA SEM 4.3)*
	Any specification for physical characteristics, configuration, material performance, personnel, or procedure that is applied uniformly for the safety or regularity of international air navigation and to which the international aviation community conforms. *(ICAO – see FAA SEM 4.3)*
Subsystem	A system in and of itself (reference the system definition) contained within a higher-level system. The functionality of a subsystem contributes to the overall functionality of the higher-level system. The scope of a subsystem's functionality is less than the scope of functionality contained in the higher-level system. *(FAA SEM 2.2)*
Synthesis	The creative process which translates requirements (performance, function, and interface) into alternative solutions resulting in a physical architecture for the "best-value" design solution, made up of people, products, and process solutions for the logical, functional grouping of the requirements. *(FAA SEM 4.1)*
System	An integrated set of constituent pieces that are combined in an operational or support environment to accomplish a defined objective. These pieces include people, hardware, software, firmware, information, procedures, facilities, services, and other support facets. *(FAA SEM 2.2)*
System Boundary	The interface between system elements under design control and elements that are not. *(FAA SEM 4.3)*
System Engineer	Individual who concentrates on the design and application of the whole (system), as distinct from the parts, and who looks at a problem in its entirety, taking into account all the facets and all the variables and relating the social to the technical aspects. *(Ref SEM 1.0)*
System Engineering	A discipline that concentrates on the design and application of the whole (system) as distinct from the parts. It involves looking at a problem in its entirety, taking into account all the facets and all the variables and relating the social to the technical aspects. *(FAA SEM 1.0)*

TERM	DEFINITION
System Engineering Management Plan (SEMP)	A document that identifies what items are to be developed, delivered, integrated, installed, verified and supported. It identifies when these tasks will be done, who will do them, and how the products will be accepted and managed. It also defines the technical processes to be used to produce each of the project's products. *(California Department of Transportation, Systems Engineering Handbook for ITS, V1.1)*
System Requirements Review	A formal review to verify that requirements have been completely and properly identified and are correct. This review can be conducted at different levels, depending on the requirements set being reviewed. *(FAA SEM 4.2.6)*
Technical Performance Measurement	a process to continuously assess and evaluate the adequacy of architecture and design as they evolve to satisfy the requirements and objectives of the program. *(FAA SEM 4.2.6)*
Technical Performance Parameter	A critical technical performance requirement that supports critical operational needs and essentially measures the extent of success or failure of a design to meet those needs. *(FAA SEM 4.2.6)*
Technology Maturity	A measure of the degree to which proposed critical technologies meet program objectives; and, is a principal element of program risk. A technology readiness assessment examines program concepts, technology requirements, and demonstrated technology capabilities in order to determine technological maturity. *(DOD 5000.2)*
Technology Readiness Assessment	A multi-disciplined technical review that assesses the maturity of Critical Technology Elements (CTEs) being considered to address user needs; analyzes operational capabilities & environmental constraints within the Enterprise Architecture (EA) framework. *(FAA SEM 3.3)*
Test	Type of verification accomplished through systematic exercising of the application item under appropriate conditions, with instrumentation, and the collection, analysis, and evaluation of quantitative data. It includes both laboratory and flight tests. *(FAA SEM 4.12)*
Thread	A system input, system output, description of the transformations to be performed, and the conditions under which these transformations are to occur. *(Refer to SEM 4.4)*
Threshold requirement	Those requirements considered so important to satisfying the user needs that a system not meeting them is deemed unnecessary or unacceptable. *(FAA SEM 4.5)*
Traceability	Characteristic by which requirements at one level of design may be related to requirements at another level. Traceability encompasses the relationship between a performance requirement and the function from which the performance requirement was derived. *(Refer to SEM 4.3)*
Trade Study	Analysis conducted to methodically evaluate a series of design alternatives and recommend the preferred feasible solution(s) that enhance the value and performance of the overall system and/or functions. Each assessment is taken to an appropriate level of detail that allows differentiation between alternatives. *(FAA SEM 4.1)*

TERM	DEFINITION
Validated (method, model, or tool)	One that has been proven to provide credible results at the associated level of fidelity for a given analysis or study. *(FAA SEM 4.9)*
Validation	the determination that the requirements for a product are sufficiently correct and complete. *(SAE ARP 4761, 1996)*
Validation Table	A listing of all requirements that describes if a requirement has been validated, where the requirement may be found, source of validation, corrective action to be taken if necessary, and the corrective action owner. *(Refer to SEM 4.12)*
Variance	Specific, written authorization to depart from a particular requirement(s) of a product's current approved configuration documentation for a specific number of units or a specified period of time. (A variance differs from an engineering change in that an approved engineering change requires corresponding revision of the product's current approved configuration documentation, whereas a variance does not.) *(Refer to SEM 4.11)*
Verification	The evaluation of an implementation [system] to determine that applicable requirements are met. *(SAE ARP 4761, 1996)*
Verification Readiness Review	A formal review to ensure that all system engineering considerations are satisfied and that the readiness of all support, test, and operational systems is in order to perform the Verification process. *(FAA SEM 3.3)*
Verification Requirements Traceability Matrix	Matrix correlating requirements and the associated verification method(s). The VRTM defines how each requirement (functional, performance, and design) is to be verified, the stage in which verification is to occur, and the applicable verification levels. *(FAA SEM 4.3)*
Waiver	A written authorization to accept an item, which during manufacture, or after having been submitted for inspection or acceptance, is found to depart from specified requirements, but nevertheless is considered suitable for use "as is" or after repair by an approved method. *(MIL-STD-973)*
Work Breakdown Structure	A key element of planning that details the activities to be performed. It is a deliverable oriented grouping of project elements, which organizes and defines the total scope of the project. Each descending level represents an increasingly detailed definition of a project component. *(FAA SEM 4.2)*